III. REMARKS

1. Applicants respectfully submit that claims 1, 2, 6-9, 11, 13-15, 19, 20, 24-27, 29, 32, 33, 37-43, 54-73 and 84 are patentable over the combination of Kavelo et al. (WO 98/41025, "Kavelo") and applicant's admitted prior art ("AAPA") under 35 USC 103(a).

The combination of Kavelo and the AAPA fails to disclose or suggest

> performing an adaptive block boundary filtering operation on a block boundary formed between a first decoded image block on a first side of the block boundary and a second decoded image block on a second side of the block boundary, the first decoded image block having been encoded using a first type of prediction encoding method and the second decoded image block having been encoded using a second type of prediction encoding method,
>
> wherein at least one parameter of the filtering operation is determined based on the types of the first and second prediction encoding methods,
>
> and wherein the first and second type of prediction encoding method is selected from a group of prediction encoding methods comprising at least: intra coding, copy coding, motion-compensated prediction coding, and not-coded coding,

as substantially recited by the independent claims.

Applicant respectfully maintains that neither Kalevo nor the AAPA discloses or suggests that at least one parameter of the filtering operation is determined based on the types of the first and second prediction encoding methods.

Page 5, line 10 through page 6, line 14 of Kalevo also discloses how some of the parameters are selected:

> Figure 2 shows the location of the pixels r_l - r_6 and l_1 - l_6 in relation to the vertical block boundary 30. For implementing the method according to the invention, certain parameters must be specified at first. The parameter n is the largest number of pixels to be examined from the block boundary to one direction, and its value is 6 in the case of Figure 2. It is practical to select the value of the parameter n so that it has a certain relation to both the difference of the pixel values A across the block boundary and to the size of the quantization step QP

of the coefficients received as the result of the coding. The following definition is recommended for use here:

$$n = \begin{cases} 0 & \Delta \geq 2.00\alpha \\ 1 & 1.50\alpha \leq \Delta < 2.00\alpha \\ 2 & 1.00\alpha \leq \Delta < 1.50\alpha \\ 3 & 0.66\alpha \leq \Delta < 1.00\alpha \\ 4 & 0.40\alpha \leq \Delta < 0.66\alpha \\ 4 & 0.25\alpha \leq \Delta < 0.40\alpha \\ 6 & 0 \leq \Delta < 0.25\alpha \end{cases} \qquad (2)$$

wherein α = QP-log(QP). If QP has a different value in blocks on different sides of the block boundary, the smaller value of QP is used in calculation, as well as in all cases presented hereinafter, in which a definition includes reference to one QP value only. The invention does not limit the determination of the value of parameter n, but according to the guidelines of the definition (2) it is advantageous that its value is generally higher when the difference of pixel values A across the block boundary is small in comparison to the size of the quantization step QP of the coefficients received as the result of the coding transformation. If the difference between the pixel values A is very large, there is probably a real image edge at the block boundary, and the pixels are not examined at this point for filtering at all (n=0). The next step is to determine the values of the parameters d_l and d_r, which represent activity, or the differences of pixel values between pixels on one side of the block boundary. For the parameter d_r, one preferred definition is the following:

$$\begin{aligned} & d_r = 6, \text{if } |r_1 - r_j| \leq \beta / j \text{ with all } j \in [1,6], \\ & \text{otherwise} : d_r = i, \text{where i must meet the conditions} \\ & i \in [1, n], \\ & |r_1 - r_{i-1}| > \beta / j, \text{and} \\ & |r_1 - r_j| \leq \beta / j \text{ with all } j \in [1, i]. \end{aligned} \qquad (3)$$

Here the auxiliary parameter β = 4.log(QP). The value of the parameter d_l is determined similarly, except that all r's are replaced by l's. The number 6 occurring in the definition (3) is the result of the fact that the highest possible value of n is 6 according to the definition (2). If n is defined differently, but the parameters d_r and d_l are defined according to definition (3), the number 6 must be replaced by the highest possible value of n according to the new definition."

Furthermore, page 4, lines 9-20 of Kalevo disclose that the number of pixels to be corrected, the characteristic features of the filter being used, and the size of the filtering window depend on a) the difference of pixel values across the block boundary, b) the size of the quantization step QP

of the coefficients received as the result of the transformation used in the coding, and c) the differences of the pixel values between the pixels on the same side of the block boundary.

It is clear that the selection of the value of the parameter n is dependent on the difference of pixel values across the block boundary and the size of the quantization parameter QP. However, the quantization parameter QP is not selected on the basis of a predictive encoding method. Neither Kalevo nor the AAPA gives any details on the operation of the motion compensation and prediction block 17 except for page 1, lines 16-20 that disclose that the frame saved in the frame memory is read as a reference frame and in the motion compensation and prediction block 17 the frame is transformed into a new prediction frame according to the formula (1).

Kalevo's Figure 3 has been previously by the Examiner as indicating that e.g. D-parameters, QP, etc. are determined based on the prediction coding method. Applicants respectfully disagree. Figure 3 does not provide any indication at all regarding selection of the parameters on the basis of the prediction encoding method. Figure 3 shows a connection from the motion compensation and prediction block 17 to the differential summer 11 and to the summer 15. The differential summer 11 performs calculations between pixel values of a current frame and a prediction frame to form a differential frame, which is coded and decoded to form a decoded differential frame. The decoded differential frame is summed in the summer 15 to the prediction frame to form a decoded frame which is stored into the frame memory 16.

Applicants respectfully submit that there is nothing in Kalevo or the AAPA which discloses or suggests that different predictive encoding methods are even used. In other words, both Kalevo and the AAPA fail to disclose first predictive encoding method and the second predictive encoding method of the present claims. In addition, there is no indication in Kalevo or the AAPA related to examining the types of the first predictive encoding method and the second predictive encoding method to determine a value of at least one parameter.

Furthermore, Applicants find no disclosure in Kalevo or in the AAPA that discloses determining a parameter of the filtering operation based on the types of the prediction encoding methods. Nowhere does Kalevo nor the AAPA discuss a coding method used as part of a filtering operation.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

/jvg44695/	9 December 2011
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